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# THE DEPLETED FORESTS OF FRANCE

BY WILLIAM H. SCHEIFLEY

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COMPETENT critics affirm that the forests of France played in the World War a rôle as important as her artillery. Had it not been for the defensive screen that they afforded during the early invasion, the French army, inferior in numbers, could not have repulsed the enemy at the Marne. In the east, the timber belt, stretching as a buffer-mask from Belfort to Verdun, aided in saving Lunéville, Nancy, and Toul. Farther to the northwest, the forests of Argonne and Ardennes formed a barrier equal to several army corps. Scarcely less valuable, during the initial clashes, were the wooded hills that extended from east of Verdun toward the coast, protecting the frontier bastions of Longwy, Montmédy, Sedan, Mézières, Maubeuge, and Mons. Better still, when Von Kluck, impatient to dine in Paris, sought by a bold stroke to cut off the capital from the bulk of the French army, it was the forests of Villers-Cotterets and Compiègne that enabled General Maunoury to beat him back by an unexpected assault upon his flank. In the crucial days of July, 1918, these woods served a similar purpose, making it possible for Marshal Foch to execute his brilliant strategic manoeuvres. Hence, J. Demorlaine, writing in the *Revue des Eaux et Forêts*, concludes that it was the French forests from the Vosges to the sea that frequently rendered harmless the enemy's offensive. Of the same opinion is Professor J. W. Toumey, who in *American Forestry* declares that, had the French possessed no forests at the outbreak of the war, their country would today be laid waste. Two thousand years ago, Cicero proclaimed the military value of forests.

Industrially, also, the woods of France proved indispensable during the war. At first timber was imported, but by 1916, the British Army found that it must rely upon procuring its supplies from the Continent. Moreover, when

the United States entered the conflict, the demand for wood products so increased that France was obliged to open her forests to the Allies.

Ere long, native lumbermen were augmented by Canadian forestry companies transferred from England, and then by American and Canadian loggers and millmen. This force, huge as it was, had to be increased as the war demanded more and more wood for ship-building, docks, barracks, trenches, cross-ties, bridges, telegraph poles, aeroplanes, and fuel. Month after month, accordingly, the felling gained momentum, sacrificing the best of the highly-developed French forests. In the Vosges and Burgundy, in Sologne and Auvergne, in the Alps and the Pyrenees, and especially in the *landes* of Gascony, the fine timber growths—husbandings of half a century—were drawn upon. At the same time, thousands of acres of wooded tracts in the war zone were being blown into splinters by shellfire. Other thousands in the territory occupied by the enemy were either felled for use or given over to systematic destruction.

The total loss to France through the war aggregates twenty-five billion feet of saw timber, to say nothing of the millions of cords of firewood consumed. Ordinarily this loss might be repaired by the growths of twelve or fifteen years; but, owing to the diminution of a third in the forest yield as a result of excessive felling and the destruction of young trees, no such recuperation will be possible. Moreover, the need for restoring the devastated departments will for a period increase tenfold the annual pre-war requirements. Even in normal times the French imported more than half of their industrial lumber. Thus the greatest magician in fable could not with his wand conjure up on the home territory of France enough saw timber for her requirements. Since to continue cutting trees before their maturity would but aggravate the difficulty, another solution must be found. The treaty of Versailles, it is true, requires Germany to furnish to France considerable lumber by way of indemnity, but this source of supply is uncertain. Nor can the vast Russian forests be depended upon at present. France could purchase lumber in America and Scandinavia, were it not for the prohibitive rate of exchange. As a temporary measure while increasing home production, she will be obliged to turn to her colonies. A dual programme of this sort was recently presented in the *Revue de*

*Paris* by Paul Descombes, who declares that France must double permanently her national forest production, and also obtain elsewhere ten million cubic meters of lumber annually.

To double native production, M. Descombes thinks that, besides replanting and restoring, France should increase by at least ten million acres her former timber area. This comprised twenty-three million acres, or eighteen per cent of the country, not including Alsace and Lorraine,—additions which now make a total of 23,450,000 acres owned by the State, the communes, and individuals in the proportion of twelve, twenty, and sixty-eight per cent respectively. The suggested increase of ten million acres would insure to the country twenty-six per cent of forest.

For regenerating French forests, nothing better has been suggested than the plans submitted in 1910 by the official Commission for Inundations. This programme called for: (1) the reforestation of ten million acres at eighty francs per acre (800,000,000 francs); (2) twenty annuities of a million francs as an encouragement to forest culture (20,000,000 francs); (3) purchases and improvements by the State (480,000,000 francs); (4) completion of the work of reforestation already undertaken by the State in mountainous "perimeters" (115,000,000 francs); (5) intensive culture of existing forest "perimeters" (300,000,000 francs); and (6) checking erosion in the mountains (15,000,000 francs). Thus, if France were to plant rapid-growing coniferous species, she could in twenty years, at a total estimated cost of 1,700,000,000 francs, so extend and improve her forests as to become self-supporting at the end of three-quarters of a century. This would require each department to afforest annually less than a fourth as many acres as did the participating departments in the *landes* of Gascony under the Second Empire. It is true that, owing to the increased cost of labor, the total expenditure would probably exceed by at least a third the estimates of 1910; but lumber purchased in foreign countries would also cost as much more henceforth. Even supposing the work of reforestation to require two billion francs, the country should not hesitate.

The construction of French railways cost more than eight times as much. Moreover, had the problem of reforestation been solved seventy years ago, the

seven billion paid for foreign lumber since 1850 would have been saved.

It is clear that France for the present should seek lumber in her colonies, which possess admirable forest resources awaiting exploitation. Certain of these possessions, especially Indo-China, Guiana, Madagascar, the Ivory Coast, Dahomey, and the French Congo, besides furnishing such products as rubber, cocoanuts, palm-oil, gum, tan-bark, and corkwood, are rich in timber. Investigations made shortly before the outbreak of hostilities and during the war revealed the fact that approximately two-thirds of colonial saw timber could be substituted for the kinds of lumber hitherto imported by France. The colonies excel in the production of ebony, cabinet woods, and mahogany. To be sure, capital and labor will be scarce; but with a progressive reduction in freight rates, and the extension of partial manufacture in the region of supply, the French can allow to their home forests time for recuperation. If, by advancing the necessary funds, the State develops the colonial forest service, handsome returns to French industry and commerce will follow.

Although, as already noted, the strategic and industrial value of forests amply justifies their culture, yet, even apart from these national considerations, reforestation is important. It will prove an excellent investment for the individual. This view is taken by L. Breton-Bonnard in his illuminating book, *Reboisement par les Résineux*. Here the author writes: "Reforestation, though relatively inexpensive, is exceedingly remunerative—an investment demanding but one original expenditure. It is an operation, however, of long duration, requiring careful adaptation of the species to soil, climate, and altitude."

Experience has shown that resinous trees: the pine, the fir, the spruce, and the larch, are most profitable, since they need little or no cultivation, grow rapidly even on poor soil, and never fail. It is with them that France should afforest her dry wastes, sand dunes, and mountains. Such trees further prepare the soil in which they grow for the leafy species as well.

M. Breton-Bonnard's conception of the utility and beneficence of reforestation may be summed up thus:

We must make our sterile lands yield as quickly as possible millions for old-age pensions and the stimulation of industry. To take rough,

arid tracts and convert their poverty into vigorous life, . . . is to perform an economic and social work that will increase the private and national wealth of France. To do this means furnishing later to the State unexpected revenues of various sorts, diminishing from year to year our importations of wood. To do this means augmenting our exportations of wood and at the same time supplying our railroads and merchant marine with freight. The proper extension of our forests will insure supplies for our numerous wood-working industries, and will render our rural districts healthier, more agreeable, more productive, and more populous.

Already the French have demonstrated that this eulogy of forest culture is far from utopian. Afforestation of the dunes and *landes* of Gascony affords an instance of the value of such efforts. The *landes* are a triangular-shaped region, situated on the southwest coast of France, between the Gironde and Adour rivers, a hundred and twenty miles in length, seventy at most in width, and comprising nearly five million acres, or one-fourth of the pre-war forest area of France. Formerly the sand dunes next to the Atlantic, owing to their unstable character, so endangered the adjoining marshlands to the east that by 1786 more than a million acres of the latter had been abandoned. In that year, however, an engineer, Nicolas Brémontier, obtained a small subsidy for the reforestation of the dunes. The experiment was carried out with maritime pines, and, proving a success, was applied with even better results by Chambrelent to the marshlands. The swamps and their attendant fevers gradually disappeared, thanks to drainage and to the marvellous powers of absorption of the resinous trees, some of which annually imbibe and exhale into the atmosphere as much as four hundred times their weight. Accordingly, in 1857, a law was enacted providing for completion of the enterprise. Even before 1914 this forest of maritime pines, which had cost no more than fifty million francs, was yielding timber of that value each season. From this region there is shipped to Great Britain alone more than eight hundred thousand tons of pit props every year, to say nothing of large quantities of resin and turpentine. Until 1914, an annual average of six hundred shiploads of forest products left the ports of Bordeaux and Arcachon for Germany, Italy, Russia, and other countries. Accordingly, a majority of the inhabitants of the departments of Landes and Gironde find remunerative employment in the exploitation of regions once barren.

Similar results on a smaller scale have been attained in

the marsh lands of Sologne, lying south of Orleans, between the valleys of the Loire and Cher. This region, once densely wooded, as we know from the *Gargantua* of Rabelais, had been deforested, principally in the eighteenth century, and had become a miasmic, useless waste. Happily, however, toward the middle of the last century, a committee of influential citizens, aided by the State, undertook the work of reclamation. After constructing twenty-five miles of canal, and three hundred and fifty miles of road, the committee proceeded to plant with maritime and Scotch pine some 200,000 acres. "A setback," says Professor Fernow in his *History of Forestry*, "occurred in 1879, frost killing many of the younger maritime plantations. This led, in future plantings, to a substitution of the hardier Scotch pine." Here again, as in the *landes*, the achievements have been highly gratifying, the waste tracts, originally valued at four dollars per acre, yielding that much each year after half a century.

Similarly gratifying has proved the reforestation of the arid limestone wastes in the province of Champagne, to the south of Rheims. The 250,000 acres which were reclaimed here from 1830 to 1914 again attest that forests will bring to the poorest of land lasting prosperity. Unfortunately the wooded tracts of this region suffered terribly from the war and will for years need careful culture.

In the mountainous regions, also, the work of reclamation and "pacification" must go on incessantly. Of European countries, France contains proportionately the largest area exposed to torrential action. Her dangerous mountain streams in the Pyrenees, the Alps, and the Cévennes number no fewer than fifteen hundred, or two-thirds of the torrents of Europe. Their waters expose to erosion an aggregate of a million acres. This evil in its acute form dates from the ruthless forest exploitations in the seventeenth and eighteenth centuries, especially during the Revolutionary period from 1791 to 1800, when the wise restrictions imposed by Colbert had been disregarded, and irreparable harm was done. The brooks, turned into torrents, began to inundate the plains and valleys, either tearing away fertile lands or silting them over with debris washed down from the mountains. Ere long, 800,000 acres of once tillable land in sixteen departments had been rendered unproductive, impoverishing a large portion of the inhabitants and compelling them to emi-

grate. Thus, during the period from 1846 to 1911, the French mountain districts suffered a diminution of five million in population, whereas for the same years the population of Switzerland increased by fifty per cent. Colbert used to fear that France would some day perish for want of wood, or, as Michelet expressed it, "With the last tree will disappear the last man."

Thanks, however, to the untiring devotion of the French Forest Department, whose methods of treating torrents have created a new science, the peril is now under control. At first, in 1860, the territories were divided into "perimeters," a term applied to the region devastated by a stream and its tributaries. The "perimeters" in most urgent need of treatment were expropriated by the State, the others being left to private initiative, with promise of state assistance. But, since the inhabitants, preferring to use the land for pasture, objected to bearing their share of responsibility, the State in 1882 assumed all expense, setting aside for this work about a million dollars annually. Up to 1914, it had purchased and, for the most part, reforested, some 500,000 acres. More than half the torrents are now "pacified," the achievements of French foresters in this domain having evoked international admiration.

Nowhere has the work of reclamation progressed more satisfactorily than in the Pyrenees. A. Campagne, in his interesting book, *The Forests of the Pyrenees*, gives a brief history of this region, which comprises six French departments, and describes the forests under Roman occupation, their extent and diminution during the Middle Ages, the ruinous fellings in the seventeenth and eighteenth centuries, despite the stern regulations of Colbert, and the ameliorations of the past sixty years. Characteristic of ancient conditions is the account by the collaborator of Colbert, Louis de Froidour, who with his staff of reform commissioners inspected the Pyrenees in the mid-seventeenth century. The commissioners found disorder and waste, the inhabitants living in wretchedness, exploiting both royal and communal forests at a ruinous rate, clearing pasture and farm land by fire. This devastation was checked temporarily by an Ordinance in 1669, but in the second half of the eighteenth century, it was resumed, and no longer merely in the mountains. Indeed, it was only under the First Empire that wholesale felling was checked.



A period of order and recuperation followed. An Ordinance of 1827, maintaining the essential features of that of 1669, gave to the Forest Department better organization. It created a personnel (conservators, inspectors, chief guards, *brigadiers*, and guards) and offered guarantees of competence. The School of Forestry at Nancy, destined to take in 1899 the name *Ecole nationale des Eaux et Forêts*, had been created in 1824. Its pupils and those of the *Ecole des Barres*, founded in 1875 in the department of Loiret, disseminated throughout France the science of forestry as developed by their professors. "The present organization," says M. Breton-Bonnard, "developed from the Forest Code of 1823 and from the Ordinance of 1827—both being modeled after the Ordinance of 1669—may justly be regarded as having originated in the brain of Colbert." Its efficiency is evidenced by the splendid condition of the French forests on the eve of the World War. It remains for us to consider their relation, as determined by that catastrophe, to the economic life of the country.

France lost during the war 1,250,000 acres of forest through destruction, and more than sixty per cent of her remaining merchantable timber cut for military uses. Such a drain, at a time when her demands for lumber have immensely increased, must involve economic distress, not only to "big business," but to local industries, and those dependent upon them. Before the war, 700,000 persons were employed as wood-workers, aside from farmers and peasants who gave part of their time to the woods and mills, or participated at home in wood industries. Of such industries, the more important are the manufacture of vehicles and farm implements, barrels, boxes, casks, furniture, musical instruments, paper, and wooden shoes. This last activity alone enlists the services of fifty thousand toilers.

Our Chief Forester, Henry S. Graves, writes in *American Forestry*:

Probably the first effect of the depletion of French forest supplies will be a shifting of many wood-using industries to certain large industrial centres. The necessity for importing raw materials will tend to centralize plants at points convenient for transportation. There will be a tendency to substitute machine-made articles for those made by hand. There will be fewer and larger factories for making wagons, furniture, wooden shoes, barrels, boxes, and the like. Numerous small factories will probably go out of business. Communities thrifty because of the presence of these industries will suffer or be obliged to

find some substitute. The home industries dependent upon wood will in many places disappear, perhaps permanently, as the skilled carvers, turners, and cabinet makers pass on.

The wood-workers, having become wandering laborers in other employments, will emigrate to the cities. Some, no doubt, will swell the ranks of the tramps and pickpockets. Many will be missed from farm work, which alternates with forest employment. The dislocation of local industry, upsetting the established economic equilibrium, will be found to affect the industrial and social life of rural France.

To remedy such conditions, measures must be taken at once. Reforestation will diminish and eventually stop the importation of lumber. It will protect local industries and tend to prevent destructive inundations like those of 1910 and the past winter. Writing in the *Matin* so recently as the eighth of January, 1920, André Ménabréa, President of the Syndicat d'Initiative of Paris, points out that the latest floods on French rivers are due to devastations caused by the war.

Wherever the woods have been cut in accordance with certain rules, the floods have remained within their expected limits; where the trees have been destroyed, however, the rain has coursed down the slopes as on the tiles of a roof instead of being slowly absorbed through several weeks. Paris must expect a periodic return of inundations until the forests have again grown up. Indeed, the existence of Paris will be precarious without such forests to preserve it from invasions and inundations. The forests have proved the only impregnable citadel of her defence.

It is evident, then, that the masses need to have impressed upon them the utility of forestry. Such is the aim of two organizations, the *Société des Amis des Arbres* and the *Association pour l'Aménagement des Montagnes*, functioning through two hundred and fifty branches.

Two-thirds of the waste lands of France, if reforested, would gradually grow into a property worth twenty billion francs. At the same time, reforestation would secure the country against floods and increase its beauty, health and population.

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